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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,875	03/15/2002	Qian Yu	51519-P001US-10203244	5395

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EXAMINER	
LEE, DAVID J	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/099,875	Applicant(s) YU ET AL.	
	Examiner David Lee	Art Unit 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-16 and 20-22 is/are rejected.

7)☒ Claim(s) 17-19 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 15 March 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/15/2002.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by He et al. (US Patent No. 6,621,067 B2).

Regarding claim 1, He discloses a method of polarization-scrambling an incoming optical signal, comprising the steps of: causing a variation of the SOP as a function of time for an incoming optical signal (col. 7, lines 41-43) that has an unknown SOP to produce a polarization-scrambled optical signal (col. 7, line 41: a highly polarized light which can be 'unknown' is polarization scrambled); and periodically changing said SOP of said polarization-scrambled optical signal with time (col. 4, lines 57-60), such that said periodically changing polarization-scrambled optical signal covers approximately an entire Poincare sphere surface during each time period of said periodic changing (col. 9, line 67 to col. 10, line 3).

Regarding claim 2, He discloses that the SOP is distributed substantially uniformly over said entire Poincare sphere during each time period (col. 3, lines 40-41).

Regarding claim 3, He discloses that the method further comprises the steps of propagating the periodically changing polarization-scrambled optical signal through a fiber-optic transmission link (col. 1, line 16) that contains polarization dependent loss (col. 1, line 13, and col. 1, line 43); producing a period variation as a function of time of the optical power of the polarization-scrambled optical signal propagating through the fiber-optic transmission link and measuring the optical signal power variation in real time (col. 10, line 3-6).

Regarding claim 4, He discloses that the real-time measured optical signal power variation consists of peak-to-peak optical signal power variation (col. 10, line 5).

Regarding claim 5, He discloses that the optical signal power variation is measured using a photo-detector (col. 9, line 65).

Regarding claim 6, He discloses that the fiber-optic transmission link contains optical fibers (fig. 5, photo-detector 12 and col. 1, line 16).

3. Claims 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Suh et al. (US Pub. No. 2002/0109901 A1).

Regarding claim 20, Suh discloses a system for real-time compensation of the performance degrading effect induced by PDL in a multi-wavelength fiber-optic communication system (fig. 16A), said system comprising: a first optical polarization controller having an input port operable to receive an input optical signal having a polarization state (fig. 16A, PC section 752), said first optical polarization controller being operable to adjust the polarization state of the input optical signal to produce a

first intermediate optical signal (fig. 17, polarization scrambler 820); a first optical element coupled to the first polarization controller (fig. 16A, birefringent element 758) and operable to receive and to cause a fixed PDL (a natural limiting factor in high-capacity WDM systems) in the first intermediate optical signal to produce a second intermediate optical signal; a second optical polarization controller (fig. 16A, PC section 756) coupled to said first optical element, the second optical polarization controller being operable to adjust the polarization state of the second intermediate optical signal to produce a third intermediate optical signal (fig. 17, polarization scrambler 820); and a second optical element substantially identical to said first optical element (fig. 16A, 758 on right side of PC section 756), the second optical element being operable to receive and to cause a fixed PDL in the third intermediate optical signal (PDL is a natural limiting factor in high-capacity WDM systems) to produce an output optical signal.

Regarding claim 21, Suh discloses that the system has an adjustable PDL (paragraph 0155: the adjustability feature in the system as described by Suh can be constructed according to a PDL controller).

Regarding claim 22, Suh discloses that the system comprises a recirculating optical loop (fig. 15: feedback loop, fig. 16A: the recirculating loop is incorporated with the feedback sensor 758 and circulates throughout the system).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over He et al. in view of Otsuka et al. (US Patent No. 5,841,557).

Regarding claim 10, He discloses scrambling an SOP in a continuous-wave ancillary wavelength periodically in time (col. 7, lines 41-43, and col. 4, lines 57-60), monitoring in real time the instantaneous value of the PDL in the ancillary wavelength (col. 10, line 5) and adjusting the polarization controller in response to the real-time monitored instantaneous PDL value (col. 7, line 55-58). He does not disclose transmitting the ancillary wavelength with a plurality of data modulated wavelengths. Otsuka discloses transmitting a continuous-wave ancillary wavelength substantially central relative to a plurality of data-modulated wavelengths (col. 4, lines 5-8, and col. 7, lines 32-36: the ancillary wavelength can be any one of 1-1 through 1-N wavelengths in fig. 1, whichever is the 'aimed' channel) through the communication system together with the data-modulated wavelengths (fig. 1), and the continuous-wave ancillary wavelength having an unknown SOP (col. 3, lines 66-67: the SOP is scrambled and if desired, it can be unknown). Otsuka also discloses scrambling the SOP in the continuous-wave ancillary wavelength periodically in time (col. 3, line 66 to col. 4, line 7). It would have been obvious to one of ordinary skill in the art at the time of invention to transmit the ancillary wavelength as disclosed by He with a plurality of data-modulated wavelengths in a communication system, as indicated by Otsuka, in order to

manage and compensate for deterioration of signals due to negative polarization effects.

Regarding claim 11, He discloses a method of polarization-scrambling an incoming optical signal, comprising the steps of: causing a variation of the SOP as a function of time for an incoming optical signal (col. 7, lines 41-43) that has an unknown SOP to produce a polarization-scrambled optical signal (col. 7, line 41: a highly polarized light which can be 'unknown' is polarization scrambled); and periodically changing said SOP of said polarization-scrambled optical signal with time (col. 4, lines 57-60), such that said periodically changing polarization-scrambled optical signal covers approximately an entire Poincare sphere surface during each time period of said periodic changing (col. 9, line 67 to col. 10, line 3).

Regarding claim 12, He discloses that the SOP is distributed substantially uniformly over said entire Poincare sphere during each time period (col. 3, lines 40-41).

Regarding claim 13, He discloses that the method further comprises the steps of propagating the periodically changing polarization-scrambled optical signal through a fiber-optic transmission link (col. 1, line 16) that contains polarization dependent loss (col. 1, line 13, and col. 1, line 43); producing a period variation as a function of time of the optical power of the polarization-scrambled optical signal propagating through the fiber-optic transmission link and measuring the optical signal power variation in real time (col. 10, line 3-6).

Regarding claim 14, He discloses that the real-time measured optical signal power variation consists of peak-to-peak optical signal power variation (col. 10, line 5).

Regarding claim 15, He discloses that the optical signal power variation is measured using a photo-detector (col. 9, line 65).

Regarding claim 16, He discloses that the fiber-optic transmission link contains optical fibers (fig. 5, photo-detector 12 and col. 1, line 16).

6. Claims 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. 6,396,575 B1 is cited to show the testing and measuring of a system with PDL.

US Publication No. 2003/0175034 A1 is cited to show a method and apparatus for optical information transmission varying the polarization.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJL

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